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Sipin

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(54) **CONTROLLED FLUID TRANSFER SYSTEM**

2592306 7/1987 (FR) .

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(57) **ABSTRACT**

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Related U.S. Application Data

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1992, now abandoned.

(51) **Int. Cl.**⁷ **A61M 31/00**

(52) **U.S. Cl.** **604/65**

(58) **Field of Search** 604/65, 66, 67,
604/132, 133, 140, 141, 142, 145, 146,
151, 153; 222/15, 55, 96

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,640,277 2/1972 Adelberg .
3,895,741 * 7/1975 Nugent 222/103
4,432,468 * 2/1984 Siff et al. 222/55

FOREIGN PATENT DOCUMENTS

0343286 11/1989 (EP) .

The present invention is a closed loop system for transfer of a fluid through a line between a reservoir and a vessel in a manner to provide a flow-related parameter at a selected value. The system will have major use as a non-gravity-dependent infusion device. The system comprises a pressurizable reservoir containing a quantity of the fluid; means to control the flow of the fluid being transferred in a conduit between the reservoir and the vessel, including means to pressurize the reservoir; reference means with an output related to a selectable value of the flow-related parameter; means to measure the flow-related parameter; means to compare the outputs of the reference means and the measuring means; and means responsive to the output of the comparator means to adjust the fluid flow control means to provide the selected value of the flow-related parameter. Normally, the flow-related parameter will be the fluid flow rate in the conduit or the change of fluid volume in the reservoir.

17 Claims, 18 Drawing Sheets

